



September 4, 2012
Project No. 8128.01.20

Mr. Dana Bayuk
Oregon Department of Environmental Quality
2020 SW 4th Avenue
Portland, Oregon

Re: Proposed Reduction of Performance Monitoring Program - Siltronic Corporation

Dear Mr. Bayuk:

The following letter proposes revisions to the groundwater monitoring program at the Siltronic Corporation (Siltronic) facility. This proposal follows the discussion during the July 12, 2012 meeting between Department of Environmental Quality (DEQ) staff and Siltronic and its representatives.

There are 54 WS-series wells on the Siltronic property (see Figure 1), 52 of which were installed between 2003 and 2011 for the purpose of characterizing the nature and extent of groundwater impacts from the TCE release, or for evaluating the performance of the EIB remedy. Data collected from these wells includes water levels and analytical data. The frequency of data collection ranges from monthly to semi-annually. The current scope of monitoring was approved by DEQ on December 13, 2011, in response to the request dated August 19, 2011.

Data collection in some of these wells began in 2003 in order to support the initial Groundwater Assessment and subsequent Remedial Investigation (RI), and later the *in situ* chemical reduction (ISCR) enhanced bioremediation removal action. Since then, data collected from these wells has supported the following work:

- Completion of RI-related field work required for characterization of the nature and extent of TCE and its degradation products in the alluvial water bearing zone.
- Demonstrating that ISCR enhanced bioremediation implementation has not resulted in significantly elevated concentrations of degradation products downgradient of the Fab 1, which could trigger contingency measures identified by Siltronic and DEQ.
- The NWN RI of manufactured gas plant (the MGP RI) related impacts on the Siltronic property.
- Demonstrating that TCE rebound will not occur in the alluvial zone in the source area.
- Successful installation of ISCR-enhanced bioremediation in the fill water bearing zone in the source area.

- Design and anticipated installation of hydraulic control and containment (HC&C) components by NW Natural (NWN)¹.

With DEQ's approval of the design for the HC&C system and installation schedule, only the last four areas of work require ongoing data collection and monitoring by Siltronic or NWN. This letter therefore proposes to revise the frequency of sampling by Siltronic to meet only the following objectives²:

- 1) Demonstrate continuing progress toward meeting the remedial action objectives (RAOs) for the site described in the August 31, 2009 Performance Monitoring Plan³. Data collected to support this objective include analytical chemistry for groundwater and MGP DNAPL (where present) and water levels.
- 2) Provide supporting data for the design and implementation of the NWN HC&C system. Data collected to support this objective include analytical chemistry and water levels.

The following identifies wells currently being monitored⁴ that do or do not provide data to support these objectives, and recommends revisions to the sampling frequency or discontinuation of sampling at these locations.

DATA EVALUATION

Table 1 summarizes the wells and the groups, along with the monitoring objectives and recommended data collection frequency.⁵ Three Groups are identified, based upon the recommended monitoring frequency:

- Group A includes wells with elevated concentrations or fluctuating trends of TCE and its degradation products. These wells were monitored to (a) support implementation of contingency measures based on increased concentrations of degradation products at the riverbank or (b) document EIB performance. The current frequency of monitoring varied from monthly to bimonthly. NWN's commitment to move forward with implementation of the alluvial source control measures obviates

¹ As approved by DEQ in the August 9, 2012 letter to NWN, and subject to conditions included therein.

² With respect to the MGP RI work, Siltronic can allow for continued access to wells on the Siltronic property for data collection by NWN and its representatives.

³ These RAOs are subsequently referred to as RAO 1 (TCE concentrations below 11,000 ug/L in the source area) and RAO 2 (concentrations of TCE and its degradation products below Joint Source Control Strategy (JSCS) Screening Level Values (SLVs) at the riverbank).

⁴ Wells WS8-33/59, WS9-34, WS10-27, WS16-125/161, and WS17-52/94 are not currently monitored and are excluded from this evaluation.

⁵ Applies to both groundwater sampling and groundwater elevations.

the need for contingency monitoring on a monthly basis. Based on the performance monitoring completed to date, a bimonthly frequency is adequate to identify trends and document performance in the source area, and collect data to support design and installation of the NWN SCM at the riverbank. MFA will evaluate the frequency of sampling and water level collection in these wells and may increase the frequency as needed, once the NWN SCM installation and testing procedures have been finalized.

- Group B includes wells that were monitored to document EIB performance. As shown on Figures 2 through 14, concentrations of TCE and its degradation products have either been not detected, or demonstrate declining trends. These data confirm the long-term effectiveness of ISCR-enhanced bioremediation. RAO 1 has been met in all of these wells, and continued monitoring of these wells is not required to demonstrate continued performance. Based on the data and the continued bimonthly monitoring of the Group A wells, MFA recommends discontinuing monitoring at these locations.
- Group C includes contingency monitoring wells with very low or non-detect concentrations of TCE and its degradation products (i.e., at or approaching RAO 2), and wells installed to support the RI field work. As noted above, NWN's commitment to move forward with implementation of the alluvial source control measures obviates the need for contingency monitoring on a monthly basis. The RI field work for the alluvial aquifer is completed, and continued sampling of these wells will not provide additional information for the RI. Based on the data and the transition of certain wells to the NWN SCM performance monitoring program (discussed below), MFA recommends either (a) suspending monitoring in these wells for the purposes of either contingency monitoring or RI characterization or (b) incorporating these wells into data collection as needed to support NWN SCM design, installation, testing and/or operation.

Two Group A wells (WS15-85, and WS-33-81) are currently monitored monthly for MGP DNAPL thickness and sampling. A third (WS43-36) is monitored weekly for MGP DNAPL thickness and sampling, combined with product removal. MFA recommends continuing this program in order to evaluate the effect of DNAPL removal on TCE concentrations.

Certain wells installed during the RI will be incorporated into the Groundwater Source Control Measures Performance Monitoring Plan consistent with Table 3-5 of the Revised Groundwater Source Control Construction Design Report, and required revisions provided by DEQ on August 9, 2012. These include WS11-161, WS12-125, WS14-161, WS21-112 and WS26-86. Additionally, wells WS8-33, WS8-59 and WS12-161 on the Siltronic property will be equipped with transducers to assess the lateral limits of the hydraulic influence of the hydraulic control and containment system.

The recommendations herein are intended to meet the objectives (1) and (2) identified above. Siltronic understands that these objectives may change as the installation and testing of the NWN SCM components progresses, and is open to adjusting the frequency and analytical scope of data collection as needed.

Siltronic will continue to provide access to NWN's contractors as needed to comply with DEQ requirements for monitoring the design and installation of the SCM. MFA is not recommending revisions to the analytical scope at this time. Siltronic appreciates DEQ's timely review and approval of these recommendations, as the next monthly sampling event is scheduled for September, 2012.

Sincerely,

Maul Foster & Alongi, Inc.



James Peale, RG
Senior Hydrogeologist



Ted Wall, PE
Principal Engineer

Attachments: Tables
Figures

cc: Tom McCue, Siltronic Corporation (electronic and hard copy)
Alan Gladstone, Davis Rothwell Earle and Xochihua (electronic and hard copy)
Chris Reive, Jordan Schrader Ramis (electronic and hard copy)
Jim Anderson, DEQ (electronic)
Kristine Koch, EPA (electronic)
Sean Sheldrake, EPA Seattle (electronic)
Rene Fuentes, EPA Seattle (electronic)
Chip Humphrey, EPA Portland (electronic)
Lance Peterson, CDM (electronic)
Bob Wyatt, NW Natural (electronic)
Patty Dost, Pearl Legal Group LLC (electronic)
John Edwards, Anchor QEA LLC (electronic)
Carl Stivers, Anchor QEA LLC (electronic)
Rob Ede, Hahn and Associates, Inc. (electronic)
Tom Gainer, DEQ (electronic)
Henning Larsen, DEQ (electronic)
Matt McClincy, DEQ (electronic)

TABLE



Table 1
Recommended Monitoring Frequency
Siltronic Corporation
Portland, OR

Well Group	Well	Current Monitoring Frequency	Monitoring Objective	Recommended Monitoring Frequency
Group A	WS13-105	Bimonthly	EIB Performance	Bimonthly
	WS13-69	Monthly	EIB Performance	Bimonthly
	WS15-85	Bimonthly	EIB Performance	Monthly ¹
	WS18-101	Bimonthly	EIB Performance	Bimonthly
	WS21-112	Monthly	Contingency	Bimonthly
	WS21-131	Monthly	Contingency	Bimonthly
	WS23-116	Monthly	Contingency	Bimonthly
	WS24-111	Monthly	Contingency	Bimonthly
	WS25-111	Monthly	Contingency	Bimonthly
	WS25-96	Monthly	Contingency	Bimonthly
	WS30-96	Bimonthly	EIB Performance	Bimonthly
	WS32-76	Bimonthly	EIB Performance	Bimonthly
	WS33-81	Bimonthly	EIB Performance	Monthly ¹
	WS35-106	Bimonthly	EIB Performance	Bimonthly
	WS36-81	Bimonthly	EIB Performance	Bimonthly
	WS39-101	Bimonthly	EIB Performance	Bimonthly
	WS40-36	Monthly	EIB Performance	Bimonthly
	WS41-36	Monthly	EIB Performance	Bimonthly
	WS41-91	Monthly	EIB Performance	Bimonthly
	WS42-36	Monthly	EIB Performance	Bimonthly
	WS43-36	Monthly	EIB Performance	Weekly ¹
Group B	WS15-140	Bimonthly	EIB Performance	Discontinue
	WS18-71	Bimonthly	EIB Performance	Discontinue
	WS19-101	Bimonthly	EIB Performance	Discontinue
	WS19-71	Bimonthly	EIB Performance	Discontinue
	WS31-106	Bimonthly	EIB Performance	Discontinue
	WS32-106	Bimonthly	EIB Performance	Discontinue
	WS33-106	Bimonthly	EIB Performance	Discontinue
	WS34-106	Bimonthly	EIB Performance	Discontinue
	WS34-71	Bimonthly	EIB Performance	Discontinue
	WS35-76	Bimonthly	EIB Performance	Discontinue
	WS36-106	Bimonthly	EIB Performance	Discontinue
	WS37-51	Bimonthly	EIB Performance	Discontinue
	WS38-61	Bimonthly	EIB Performance	Discontinue
Group C	WS11-125	Quarterly	RI Requirement	Suspend/Incorporate into NWN SCM
	WS11-161	Semiannual	RI Requirement	Suspend/Incorporate into NWN SCM
	WS12-125	Quarterly	RI Requirement	Suspend/Incorporate into NWN SCM
	WS12-161	Semiannual	RI Requirement	Suspend/Incorporate into NWN SCM
	WS14-125	Quarterly	RI Requirement	Suspend/Incorporate into NWN SCM
	WS14-161	Semiannual	RI Requirement	Suspend/Incorporate into NWN SCM
	WS20-112	NM	None	Suspend/Incorporate into NWN SCM
	WS22-112	NM	None	Suspend/Incorporate into NWN SCM
	WS24-126	Monthly	Contingency	Suspend/Incorporate into NWN SCM
	WS24-155	Monthly	Contingency	Suspend/Incorporate into NWN SCM
	WS26-116	Monthly	Contingency	Suspend/Incorporate into NWN SCM
	WS26-86	Monthly	Contingency	Suspend/Incorporate into NWN SCM
	WS27-86	Monthly	Contingency	Suspend/Incorporate into NWN SCM

Monitoring consists of groundwater sampling and water levels, and MGP DNAPL collection/removal where present.

¹ = Frequency to be evaluated based upon MGP DNAPL and groundwater sampling data.

EIB = Enhanced in-situ Bioremediation.

NWN SCM = Northwest Natural Gas Source Control Measures.

NM = This well is not routinely monitored.

RI = Remedial Investigation.

FIGURES



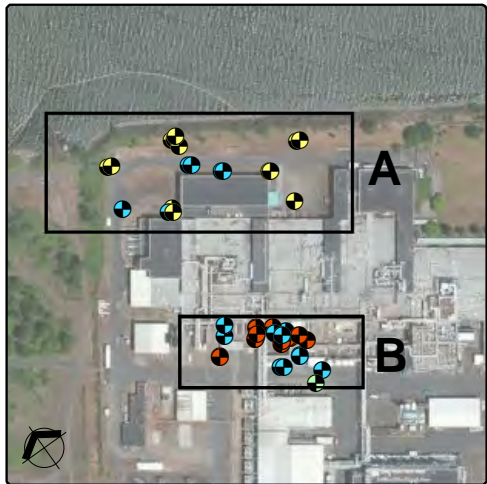


Figure 1
Monitoring Program
Reduction - Well Locations

Siltronic Corporation
Portland, Oregon

Legend

- Monitoring Wells**
- Recommended Monitoring Frequency**
- Weekly
 - Bimonthly
 - Monthly
 - Suspend/Incorporate into NWN SCM
 - Discontinue
 - Monitored Wells for NW Natural Source Control Performance



Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online/Bing Maps

MAUL FOSTER ALONG I
p. 971 544 2139 | www.maulfooster.com

This product is for informational purposes and may not have been prepared for, or be suitable for, legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Figure 2: TCE, cDCE and VC in Groundwater at WS15-140

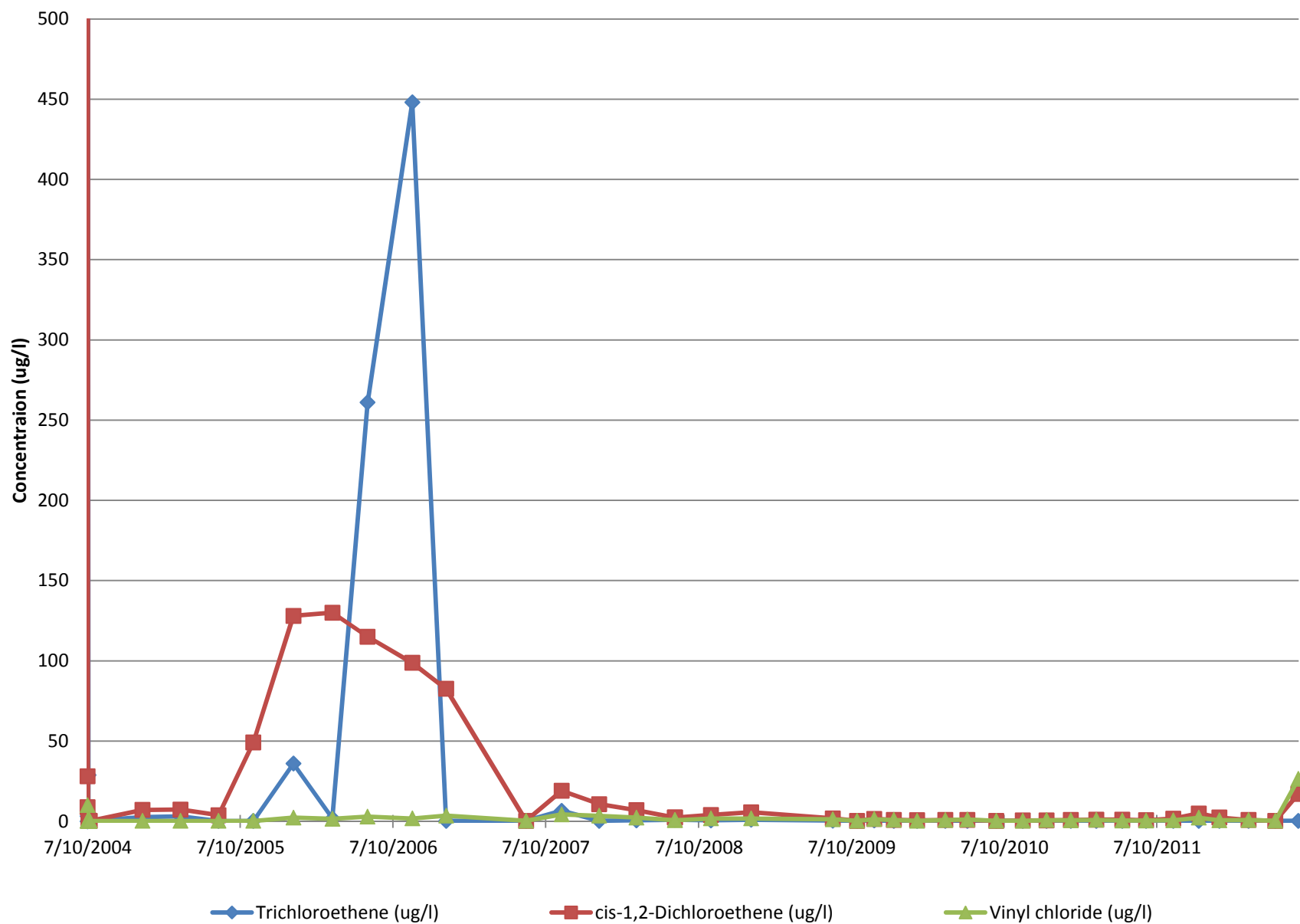


Figure 3: TCE, cDCE and VC in Groundwater at WS18-71

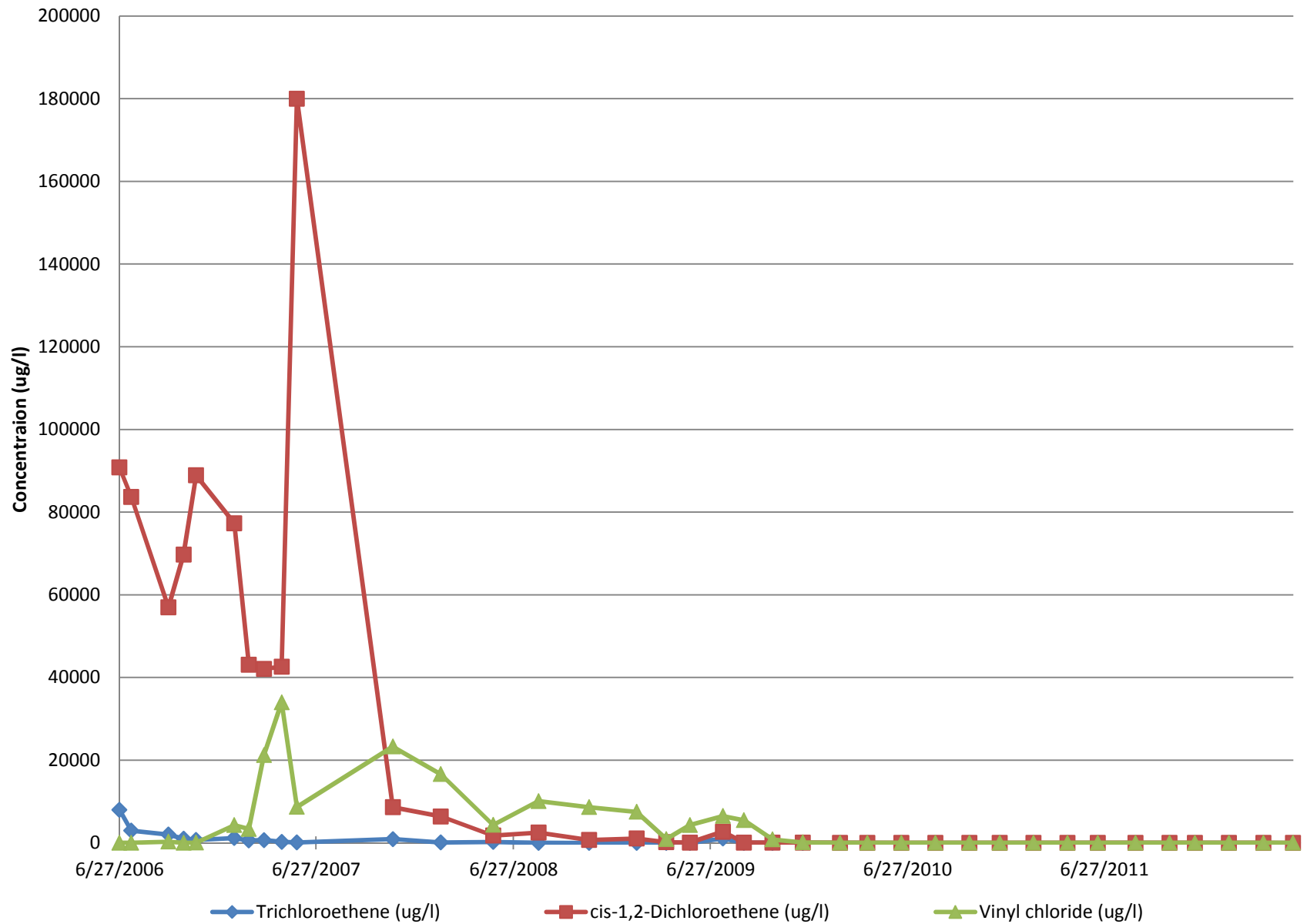


Figure 4: TCE, cDCE and VC in Groundwater at WS19-101

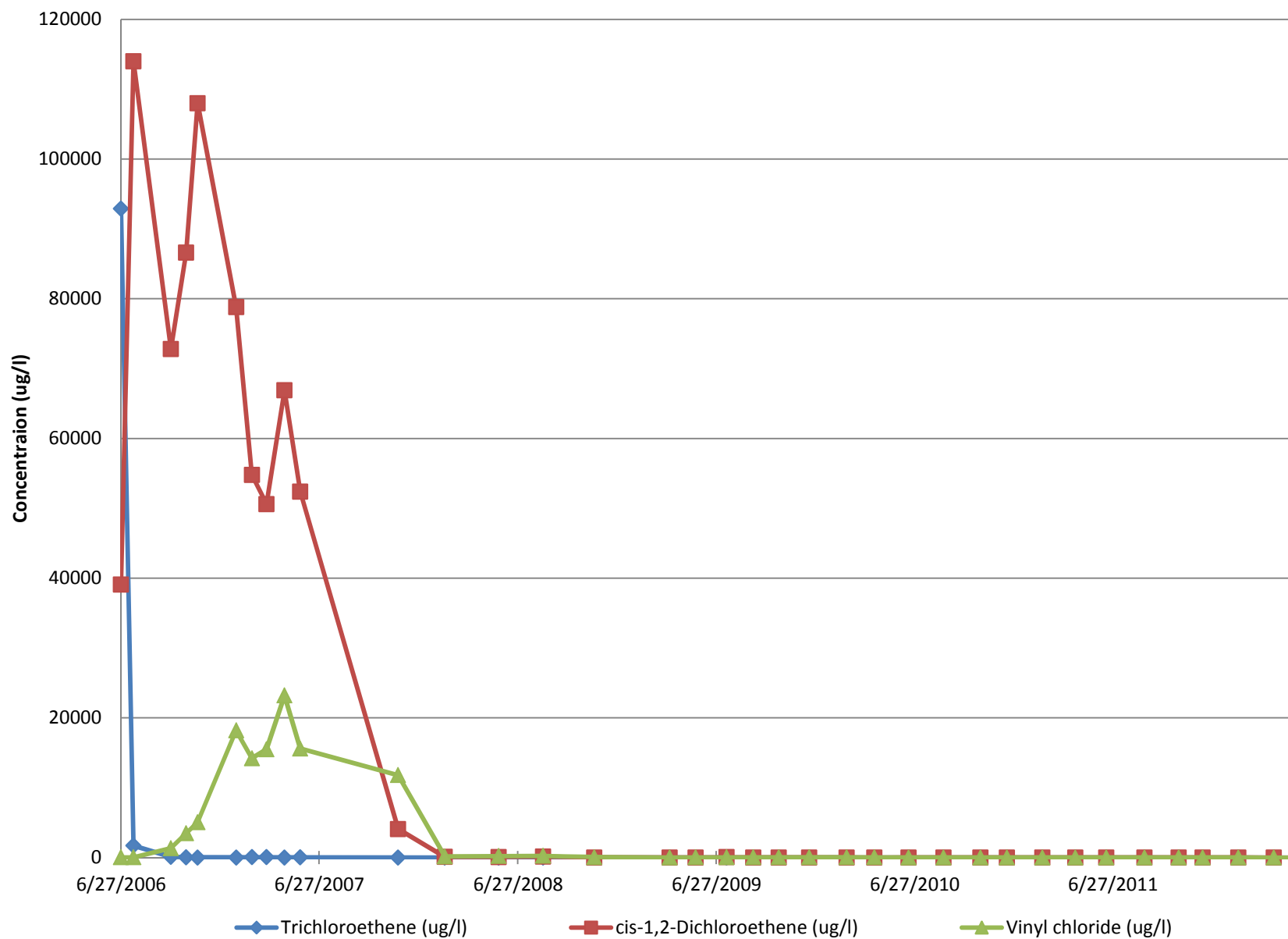


Figure 5: TCE, cDCE and VC in Groundwater at WS19-71

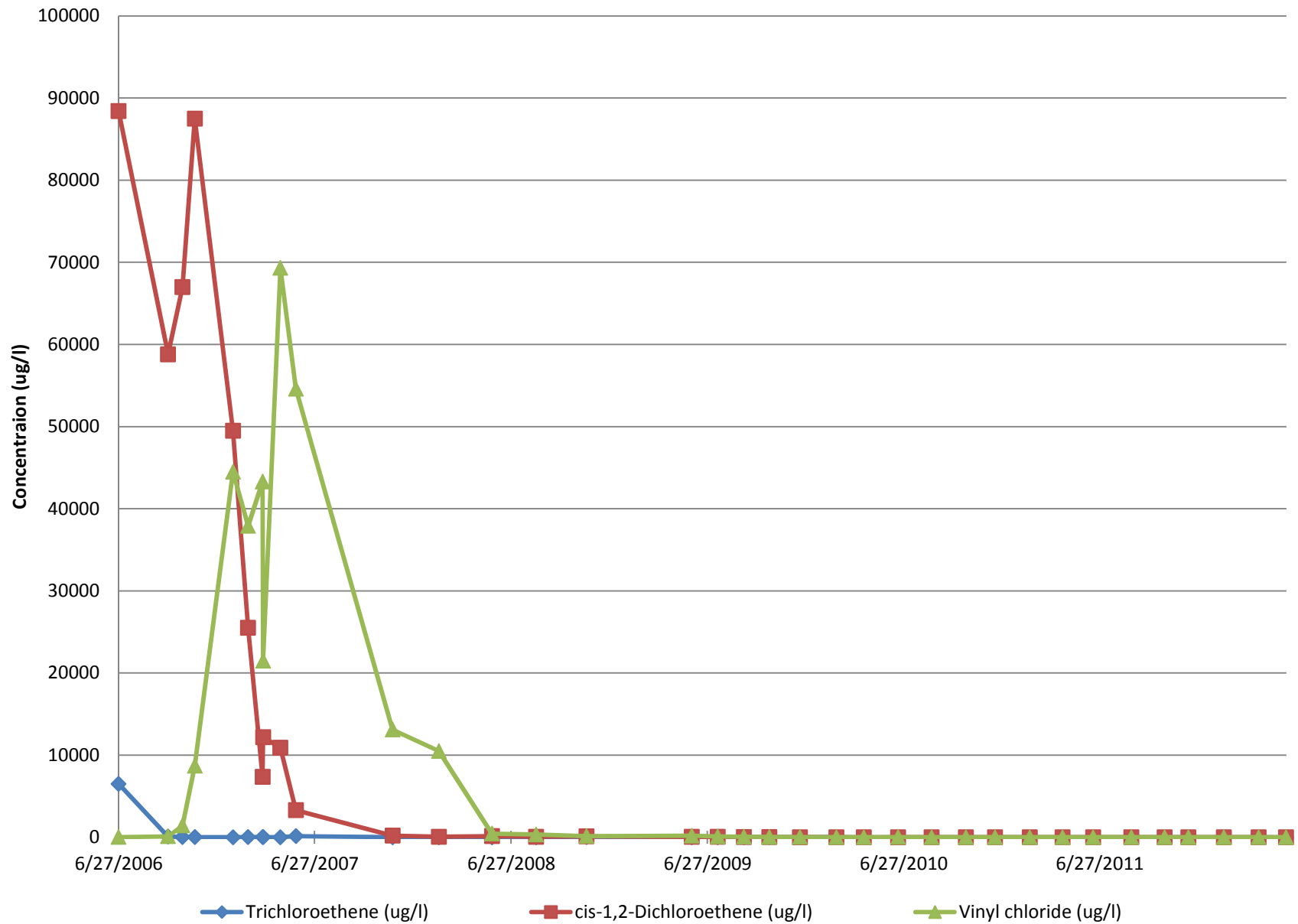


Figure 6: TCE, cDCE and VC in Groundwater at WS31-106

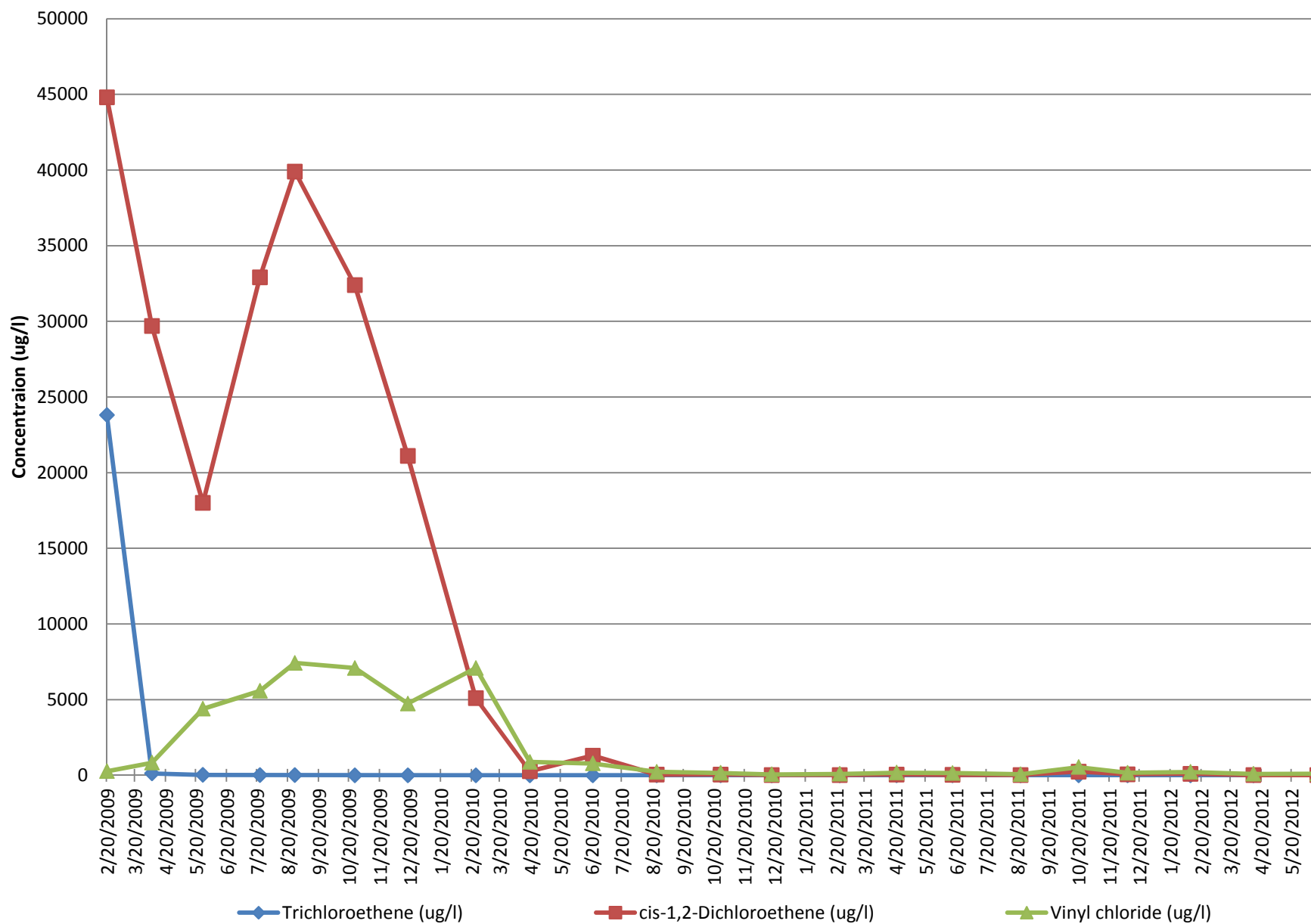


Figure 7: TCE, cDCE and VC in Groundwater at WS32-106

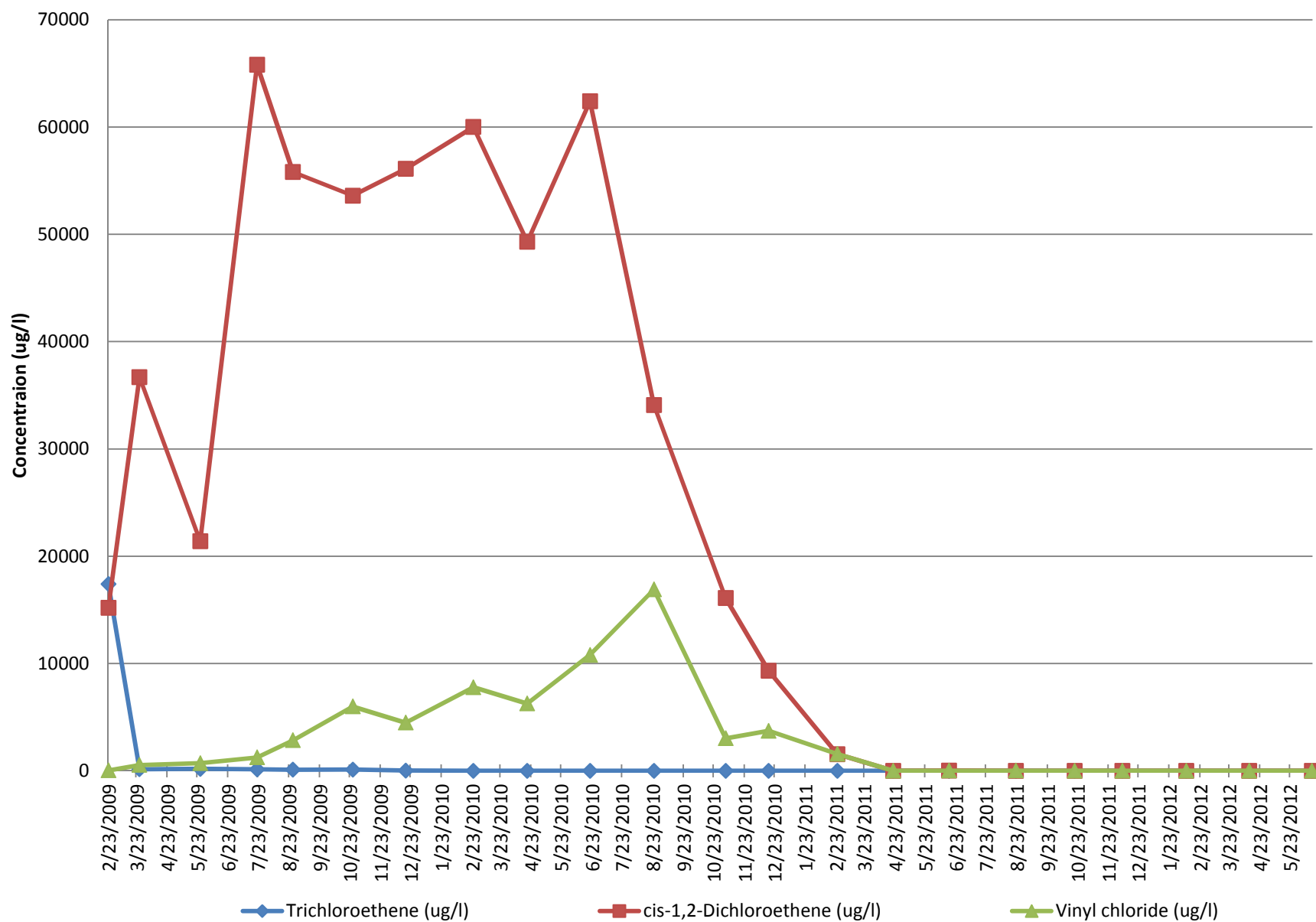


Figure 8: TCE, cDCE and VC in Groundwater at WS33-106

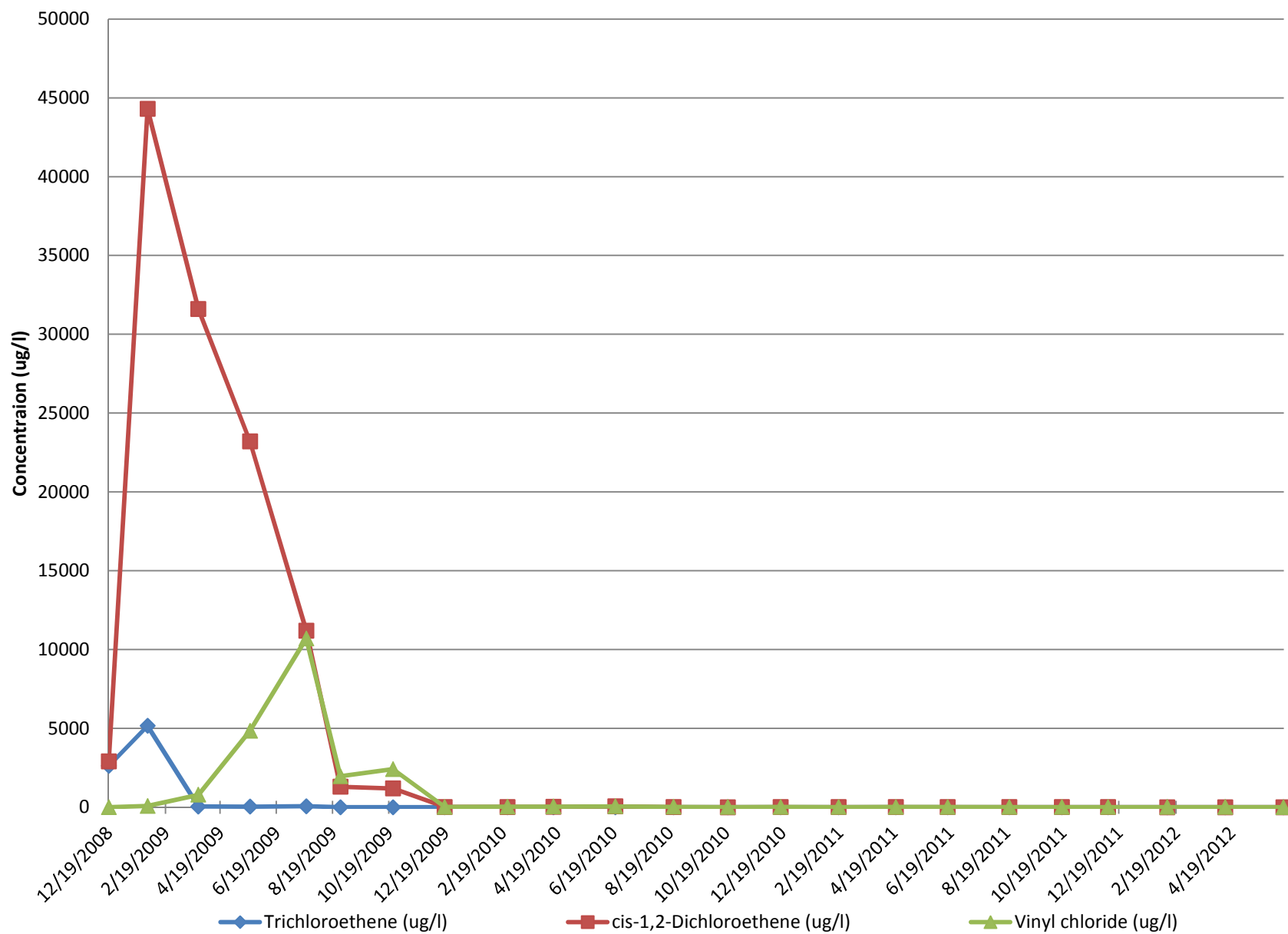


Figure 9: TCE, cDCE and VC in Groundwater at WS34-106

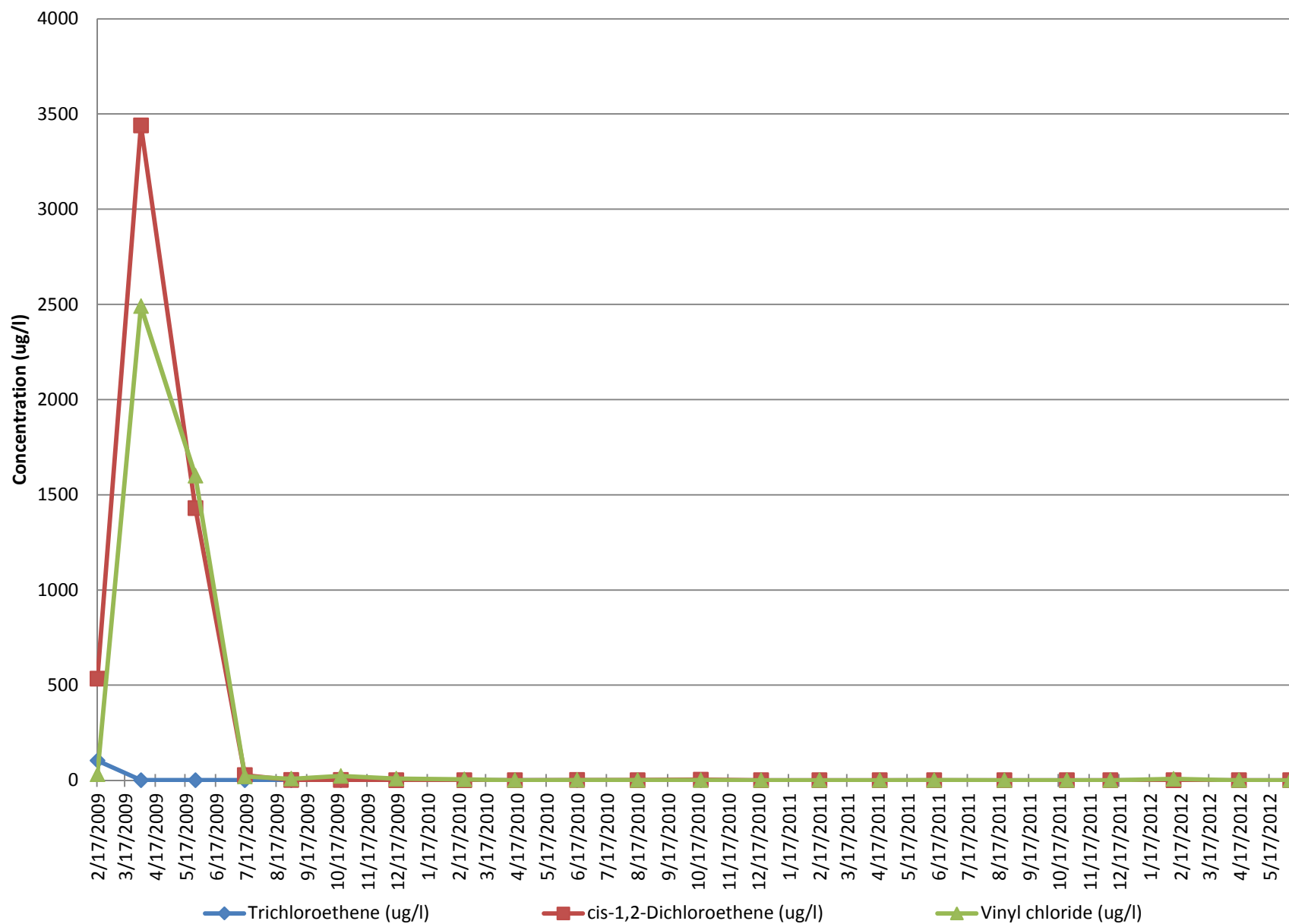


Figure 10: TCE, cDCE and VC in Groundwater at WS34-71

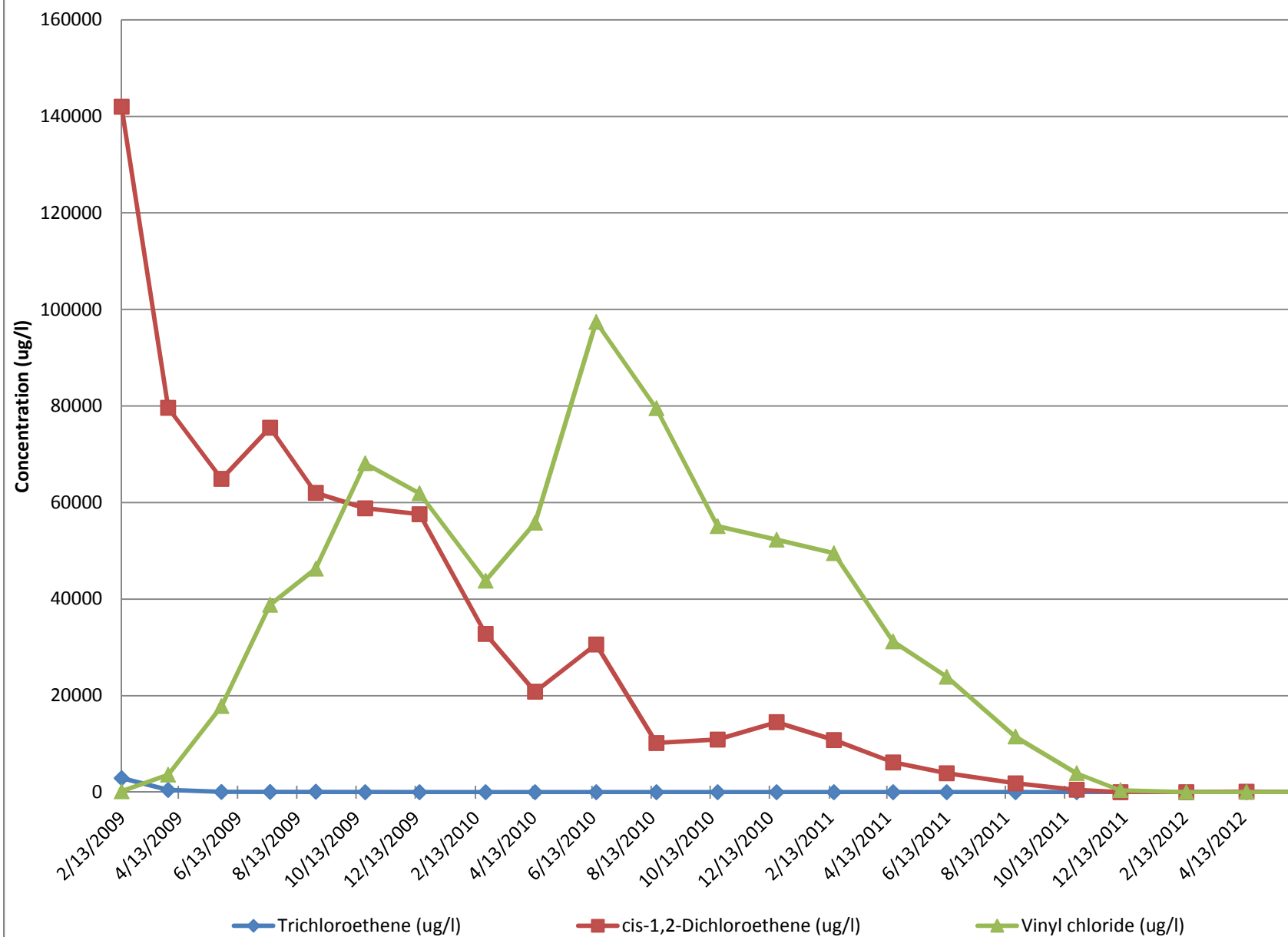


Figure 11: TCE, cDCE and VC in Groundwater at WS35-76

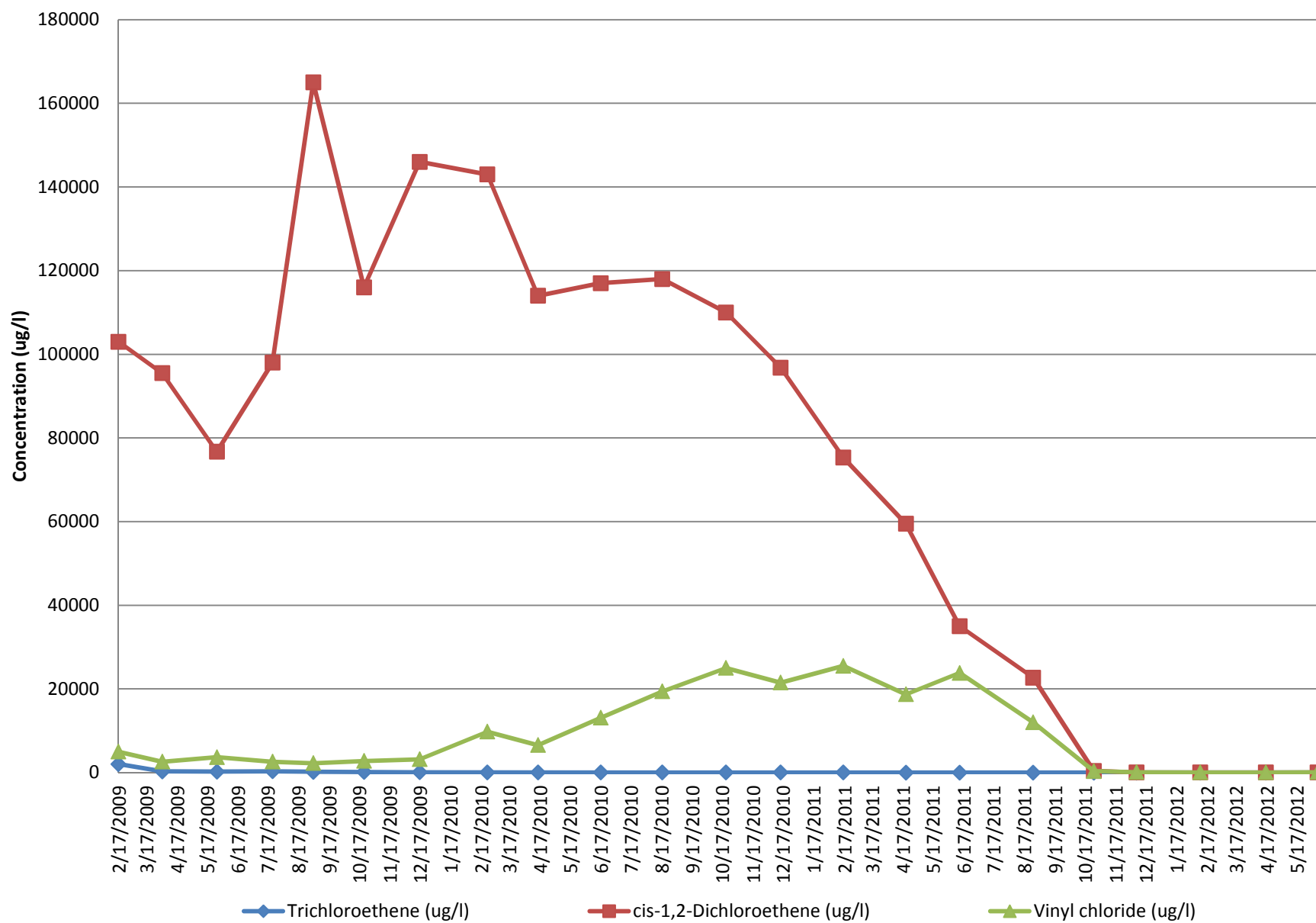


Figure 12: TCE, cDCE and VC in Groundwater at WS36-106

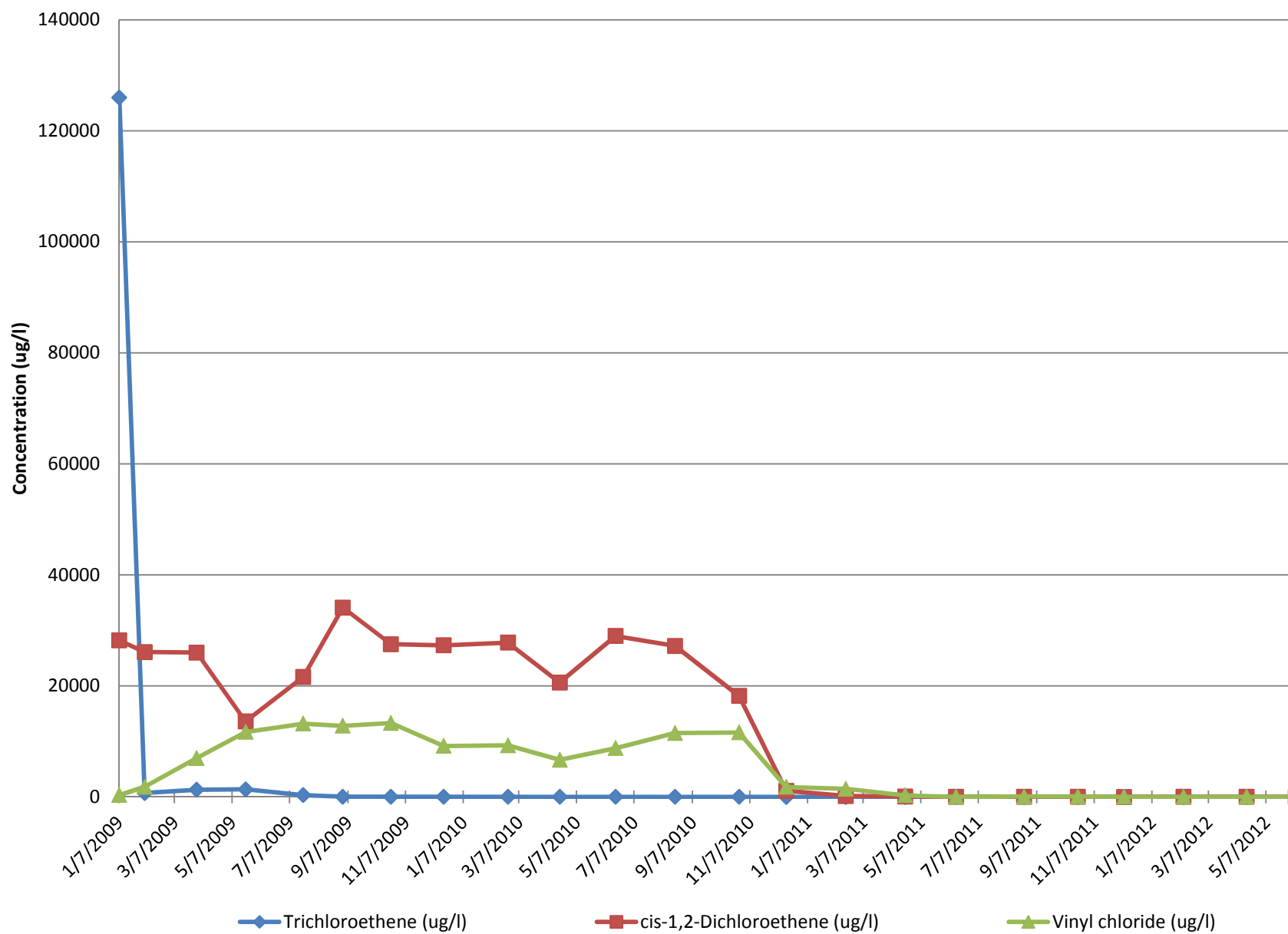


Figure 13: TCE, cDCE and VC in Groundwater at WS37-51

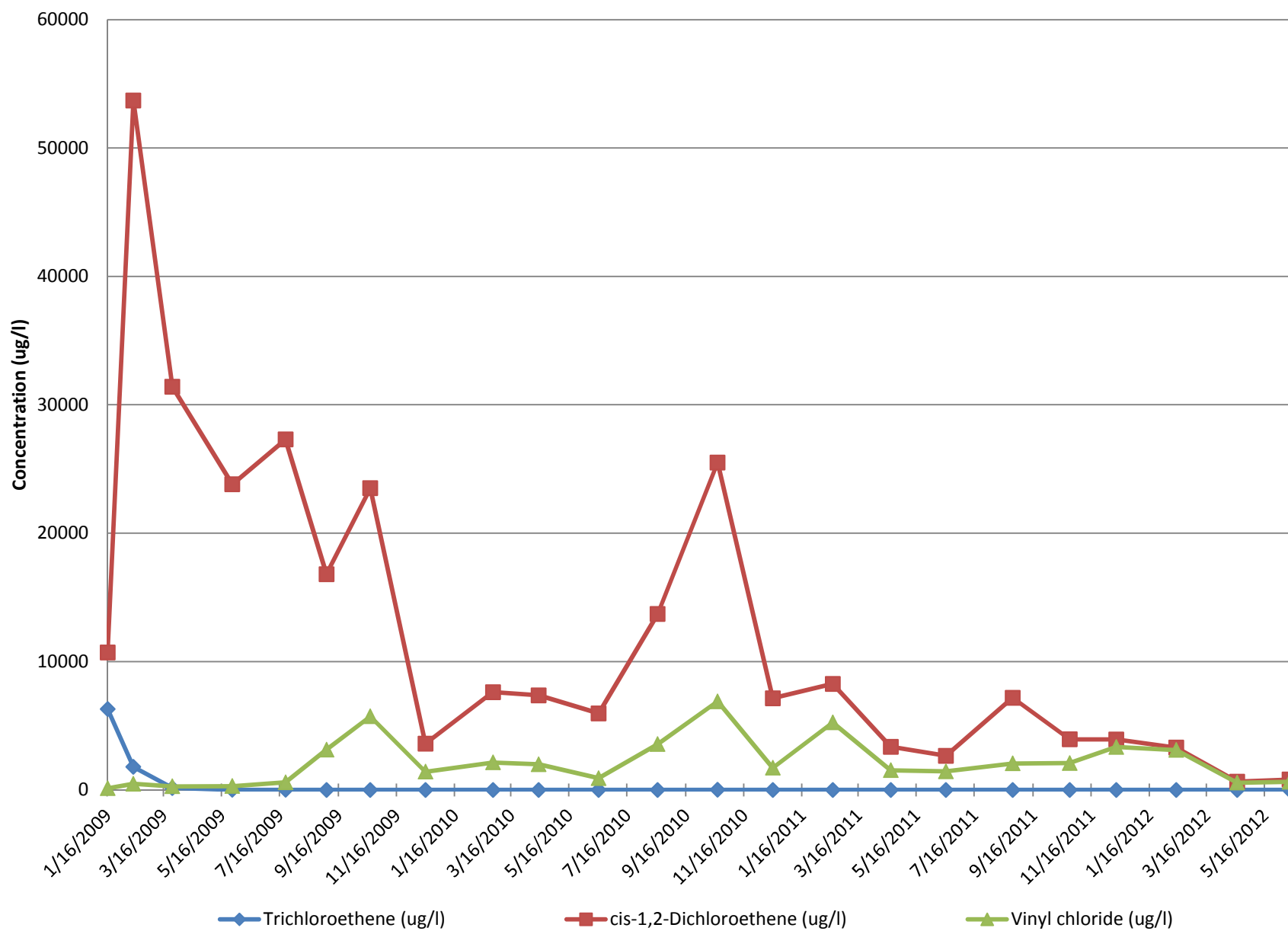


Figure 14: TCE, cDCE and VC in Groundwater at WS38-61

